REMARKS

Applicant has carefully reviewed and considered the Office Action mailed on October 15, 2001, and the references cited therewith.

Claims 1, 6, 11, 16, 21-25 and 51-53 are amended; as a result, claims 1-25 and 51-53 remain pending in this application.

§102(e) Rejection of the Claims

Applicant does not admit that the references cited under 35 USC § 102(e) are prior art, and reserves the right to swear behind such references. However, Applicant nevertheless believes the cited references are distinguishable from Applicant's claimed invention, as discussed below.

Required Claim Analysis under §102

Anticipation requires the disclosure in a single prior art reference of each element of the claim under consideration. *In re Dillon* 919 F.2d 688, 16 USPQ 2d 1897, 1908 (Fed. Cir. 1990) (en banc), cert. denied, 500 U.S. 904 (1991). It is not enough, however, that the prior art reference discloses all the claimed elements in isolation. Rather, "[a]nticipation requires the presence in a single prior reference disclosure of each and every element of the claimed invention, *arranged as in the claim*." *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1984) (citing *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 220 USPQ 193 (Fed. Cir. 1983)) (emphasis added).

Rejection based on Kunitomo

Claims 1, 3, and 4 were rejected under 35 USC § 102(e) as being anticipated by, or in the alternative, under 35 USC § 103(a) as obvious, over U.S. Patent No. 6,235,572 to Kunitomo et al. ("Kunitomo"). The Examiner points out, among other things, that the conductive layer (53) of Kunitomo has a second compound (ruthenium oxide) including a first substance (ruthenium) and a second substance (oxygen) formed to prevent the oxygen (one substance of the insulator) from the tantalum oxide diffusing into the plugs (49).

A closer reading of Kunitomo and a detailed inspection of FIGS 19 and. 26 therein reveals that the "conductive layer" actually consists of ***two distinct layers***: a reaction protective layer (50 in FIG. 19 and 53 in FIG. 26) and a ruthenium (Ru) layer (51 in FIG. 19 and 54 in FIG. 26). Col. 17, line 66 to col. 18, line 2; col. 18, lines 22-24. It is expressly stated in col. 18, lines 24-28 that "the reaction protect layer 53 functions to prevent oxygen from entering during a heat treatment in an oxidation atmosphere..." In other words, the "conductive layer" includes a separate and distinct layer dedicated to mitigating diffusion.

In contrast, Applicant's claimed invention has a conductive layer that is ***uniform***, i.e., not made up of two or more distinct layers. In Applicant's claimed invention, it is the "second compound" in the uniform conductive layer that serves the function of mitigating undesired atomic diffusion. Thus, the constitution of the electrode as a uniform structure prevents diffusion so that a separate barrier layer as taught in Kunitomo is not required. Applicant has amended claim 1 to clarify this point.

Because Kunitomo does not include each element of the claims under consideration, a rejection under 35 U.S.C. § 102(e) is improper. Accordingly, withdrawal of the rejection of claim 1 and claims 3 and 4 depending therefrom is earnestly requested.

The Examiner rejected claims 1, 3-4 in the alternative as obvious under 35 U.S.C. § 103(a) in view of Kunitomo since Kunitomo does not teach the limitation of the second compound being in an "as-deposited" state. Applicant respectfully submits this obviousness rejection is improper because the basis of the rejection, namely that the claimed "product" is "identical with or only slightly different than" the prior art of Kunitomo is erroneous As discussed immediately above, the two-layered conductive structure in Kunitomo differs significantly from the uniform conductive layer of Applicant's claimed invention. Applicant therefore respectfully requests the withdrawal of the alternative obviousness rejection of claims 1, 3-4.

Claims 6, 8, 9, 11, 14, and 15 were also rejected under 35 USC § 102(e) as being anticipated by Kunitomo. However, as discussed above in connection with the rejection of claims 1, 3-4, Applicant's invention as claimed in claims 6, 8, 9, 11, 14 and 15 includes a ***uniform*** conductor layer in distinction to Kunitomo ***two distinct*** layers. Accordingly, Applicant

respectfully submits the rejection of claims 6, 8, 9 11, 14 and 15 based on Kunimoto is improper and requests withdrawal of the rejection of these claims.

Rejection based on Lin

Claims 16, 17, 19, and 20 were rejected under 35 USC § 102(e) as being anticipated by U.S. Patent No. 6,249,040 to Lin et al. The basis of the rejection is FIG. 9H of Lin, which examiner believes illustrates the elements and limitations of Applicant's claimed invention.

A closer reading of Lin, however, indicates otherwise. In column 7, lines 44-48, it is expressly stated that the structure illustrated in FIG. 9D and formed along the way to achieving the structure in 9H includes a Ti film that serves as a diffusion barrier. However, this film is not shown in the Figures. Thus, Lin is like Kunimoto in that the capacitor structure includes a conductive layer made of ***two distinct layers*** in which one of the layers is specifically designed to mitigate diffusion. On the other hand, Applicant achieves this function using a ***uniform*** layer, as explained above. Claim 16 has been amended to particularly point out this difference. Accordingly, Applicant respectfully submits the rejection of claim 16 and claims 17, 19 and 20 depending therefrom based on Lin is improper and requests withdrawal of the rejection of these claims.

§103 Rejection of the Claims

The Examiner has the burden under 35 U.S.C. § 103 to establish a *prima facie* case of obviousness. *In re Fine*, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). To do that the Examiner must show that some objective teaching in the prior art or some knowledge generally available to one of ordinary skill in the art would lead an individual to combine the relevant teaching of the references. *Id.*

The *Fine* court stated that:

> Obviousness is tested by "what the combined teaching of the references would have suggested to those of ordinary skill in the art." *In re Keller*, 642 F.2d 413, 425, 208 USPQ 871, 878 (CCPA 1981)). But it "cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination." *ACS Hosp. Sys.*, 732

> F.2d at 1577, 221 USPQ at 933. And "teachings of references can be combined *only* if there is some suggestion or incentive to do so." *Id.* (emphasis in original).

The M.P.E.P. adopts this line of reasoning, stating that

> In order for the Examiner to establish a *prima facie* case of obviousness, three base criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *M.P.E.P.* § 2142 (citing *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)).

An invention can be obvious even though the suggestion to combine prior art teachings is not found in a specific reference. *In re Oetiker*, 24 USPQ2d 1443 (Fed. Cir. 1992). At the same time, however, although it is not necessary that the cited references or prior art specifically suggest making the combination, there must be some teaching somewhere which provides the suggestion or motivation to combine prior art teachings and applies that combination to solve the same or similar problem which the claimed invention addresses. One of ordinary skill in the art will be presumed to know of any such teaching. (See, e.g., *In re Nilssen*, 851 F.2d 1401, 1403, 7 USPQ2d 1500, 1502 (Fed. Cir. 1988) and *In re Wood*, 599 F.2d 1032, 1037, 202 USPQ 171, 174 (CCPA 1979)).

Applicant respectfully submits that the Office Action did not make out a *prima facie* case of obviousness because the cited references fail to teach or suggest all of the elements of applicant's claimed invention.

Lin in view of Summerfelt

Claims 18, 21, and 23-25 were rejected under 35 USC § 103(a) as being unpatentable over Lin in view of U.S. Patent No. 5,622,893 to Summerfelt et al. ("Summerfelt"). However, as discussed above in connection with the rejection of claim 16 under 35 USC § 102(e), Applicant's claimed invention does not include a separate and distinct diffusion barrier as taught by Lin.

Claim 16 has been amended to particularly point out that the conductive layer is ***uniform*** and adapted to mitigate diffusion. Also, claims 21 and 23-25 have been amended to particularly point out that the conductive layer is uniform, and these claims each already include a limitation relating to mitigating diffusion.

Accordingly, the cited references do not include all the limitations of Applicant's invention as claimed in claims 18, 21 and 23-25. Applicant therefore respectfully submits that the obviousness rejection is improper because Office Action fails to make a *prima facie* case. Withdrawal of the rejection is therefore respectfully requested. .

Kunitomo in view of other select references

Claims 2, 10, and 12 were rejected under 35 USC § 103(a) as being unpatentable over Kunitomo in view of U.S. Patent No. 6,066,540 toYeom et al. ("Yeom"). Also, claims 5, 7, and 13 were rejected under 35 USC § 103(a) as being unpatentable over Kunitomo in view of U.S. Patent No. 5,702,970 to Choi ("Choi"). Further, claim 22 was rejected under 35 USC § 103(a) as being unpatentable over Kunitomo in view of Yeom and further in view of Choi. In addition, claim 51 was rejected under 35 USC § 103(a) as being unpatentable over Kunitomo in view of U.S. Patent No. 6,262,450 to Kotectki et al. Finally, claims 52 and 53 were rejected under 35 USC § 103(a) as being unpatentable over U.S. Patent No. 5,815,427 Cloud et al. in view of Kunitomo.

The rejections of the above-identified claims are based on the presumption that Kunitomo discloses all the limitations of claims 1, 3-4, 6, 8,9, 11 and 14-15. However, as discussed above in connection with the rejection of claims 1, 3-4, 6, 8, 9, 11 and 14-15 under 35 USC § 102(e), the "conducting layer" of Kunitomo actually consists of ***two distinct layers***, whereas Applicant's claimed invention has a ***uniform*** layer. Further, none of the other cited references disclose this unique aspect of Applicant's claimed invention.

Accordingly, Kunitomo and the cited references do not teach all the limitations of Applicant's claimed invention. Applicant therefore respectfully submits that the obviousness rejections of the above-cited claims are improper because the Office Action fails to make a prima facie case. Withdrawal of the rejection this therefore respectfully requested.

Product by process limitations

Examiner states in the Office Action on page 13 that the limitations "as-deposited state" in claims 21, 24 and 51-53, and "the trace amount of the third substance is oxidized during the crystallization of the dielectric" in claims 24 and 25 are taken as product by process limitations. Applicant wishes to state that Applicant's believe the pending claims are patentable, and does not admit to or agree with any implication that any of the pending claims are unpatentable as an "old or obvious product produced by a new method."

CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney, Joe Gortych, at (802) 660-7199 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

CEM BASCERI ET AL.

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Commissioner of Patents, Washington, D.C. 20231, on this 14 day of February, 2002.

Tina Pugh
Name

Signature